

From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

To:

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Kamiya-cho MT Bldg. 19F, 3-20, Toranomon 4-chome,  
Minato-ku, Tokyo  
1050001  
JAPON



Date of mailing (day/month/year) 26 October 2006 (26.10.2006)	
Applicant's or agent's file reference PH-2438-PCT	IMPORTANT NOTIFICATION
International application No. PCT/JP2005/006412	International filing date (day/month/year) 25 March 2005 (25.03.2005)
Applicant SEKISUI CHEMICAL CO., LTD. et al	

## 1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

## 2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

## 3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

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Yoshiko Kuwahara

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PH-2438-PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/JP2005/006412	International filing date ( <i>day/month/year</i> ) 25 March 2005 (25.03.2005)	Priority date ( <i>day/month/year</i> ) 26 March 2004 (26.03.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant SEKISUI CHEMICAL CO., LTD.		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	This REPORT consists of a total of 5 sheets, including this cover sheet.  In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Date of issuance of this report 19 October 2006 (19.10.2006)</td> </tr> <tr> <td style="padding: 5px;">           Authorized officer   <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Yoshiko Kuwahara</div> </td> </tr> <tr> <td style="padding: 5px;">e-mail: pt07@wipo.int</td> </tr> </table>	Date of issuance of this report 19 October 2006 (19.10.2006)	Authorized officer  <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Yoshiko Kuwahara</div>	e-mail: pt07@wipo.int
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e-mail: pt07@wipo.int				

## PATENT COOPERATION TREATY

TRANSLATION

From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:		Date of mailing (day/month/year)	
Applicant's or agent's file reference <b>PH-2438-PCT</b>		FOR FURTHER ACTION See paragraph 2 below	
International application No. <b>PCT/JP2005/006412</b>	International filing date (day/month/year) <b>25.03.2005</b>	Priority date (day/month/year) <b>26.03.2004</b>	
International Patent Classification (IPC) or both national classification and IPC			
Applicant <b>SEKISUI CHEMICAL CO., LTD.</b>			

## 1. This opinion contains indications relating to the following items:

- |                                     |              |  |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/>            | Box No. II   | Priority   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention   |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited  |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application   |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application  |

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/IP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006412

Box No. I      Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language  
\_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006412

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
<b>1. Statement</b>			
Novelty (N)	Claims	<u>1, 3, 5-6, 8, 10, 12, 14, 16, 19, 21, 24</u>	YES
	Claims	<u>2, 4, 7, 9, 11, 13, 15, 17-18, 20, 22-23, 25-26</u>	NO
Inventive step (IS)	Claims	<u>1, 3, 5-6, 8, 10, 12, 14, 16, 19, 21</u>	YES
	Claims	<u>2, 4, 7, 9, 11, 13, 15, 17-18, 20, 22-26</u>	NO
Industrial applicability (IA)	Claims	<u>1-26</u>	YES
	Claims	_____	NO
<b>2. Citations and explanations:</b>			
<p>Document 1: JP 2002-324795 A (Sekisui Chemical Co Ltd), 08 November 2002, full text (Family: none)</p> <p>Document 2: JP 2003-203800 A (Sekisui Chemical Co Ltd), 18 July 2003, paragraphs 0019-0020 (Family: none)</p> <p>Document 3: JP 2002-155370 A (Sekisui Chemical Co Ltd), 31 May 2002, paragraph 0042 (Family: none)</p> <p>Document 4: JP 2003-309117 A (Tadahiro OMI), 31 October 2003, paragraph 0014 (Family: none)</p> <p>The inventions of claims 2, 4, 13, 15, 17-18, 20, 22-23, 25, 26 are described in document 1 cited in the ISR, and therefore do not appear to possess novelty or to involve an inventive step.</p> <p>The inventions of claims 7, 9, and 11 are found not to have any substantial differences with the invention described in document 1 cited in the ISR, and therefore do not appear to possess novelty or to involve an inventive step. The invention described in document 1 nitrides the substrate by creating plasma at 95 kPa (=712 Torr &gt; 500 Torr), supplying a 100% nitrogen gas, and it is therefore found on the basis of the description of Fig. 12 in the drawings of the present application that a N<sub>2</sub> (H.I.R.) and/or N<sub>2</sub> (2<sup>nd</sup> p.s.) activated species is dominant in the plasma of document 1 too.</p> <p>The invention of claim 24 does not appear to involve an inventive step over document 1 and paragraphs 0019-0020 of document 3 cited in the ISR. The plasma nitriding of document 1 is done by a remote-type plasma film forming device described in Fig. 2, but it would be easy for a person skilled in the art to perform the plasma nitriding using a direct-type forming device as described in Fig. 1 of document 3.</p>			

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006412

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

The inventions of claims 1, 3, 5-6, 10, 12, 14, 16, 19, and 21 are neither described in any of the documents cited in the ISR, nor are they obvious to a person skilled in the art. In particular, none of the documents cited in the ISR describes introducing nitrogen gas containing more than 1 ppm but no more than 0.2% of oxygen or an oxide as a gas to be introduced when forming an oxynitride film using plasma under pressure near atmospheric pressure.